

OFFICE OF BUILDING TECHNOLOGY, STATE AND COMMUNITY PROGRAMS

	<u>FY 1995</u>
<u>Office of Building Technology, State and Community Programs - Grand Total</u>	\$800,000
<u>Office of Building Systems</u>	\$800,000
<u>Materials Properties, Behavior, Characterization or Testing</u>	\$800,000
Development of Non-CFC Foam Insulations	100,000
Evacuated Powder Panel Insulation	300,000
Gas-Filled Reflective Insulation Panel	50,000
Accelerated Lifetime Test Procedure Development	250,000
Standardized Procedures for Measuring Solar Reflectivity on Horizontal Surfaces	100,000

OFFICE OF BUILDING TECHNOLOGY, STATE AND COMMUNITY PROGRAMS

OFFICE OF BUILDING SYSTEMS

The goal of this Office is to provide a scientific and technical basis (including model standards) for reducing the use of energy in residential and commercial buildings by 35 percent by the year 2000 from that used in 1975, while maintaining existing levels of human comfort, health and safety. The Division's primary objectives are to support research that advances the scientific and technical options for increased energy efficiency in buildings, to promote the substitution of abundant fuels for scarce fuels in buildings, and to promulgate standards for increased efficiency of energy use. To accomplish a portion of this, the Building Materials program seeks to: (1) develop new and improve existing insulating materials; (2) develop and verify analytical models that are useful to building designers and researchers for predicting the thermal performance characteristics of materials; (3) develop methods for measuring the thermal performance characteristics; and (4) provide technical assistance and advice to industry and the public. The DOE contact is John Talbott, (202) 586-9455.

MATERIALS PROPERTIES, BEHAVIOR, CHARACTERIZATION OR TESTING

1. **DEVELOPMENT OF NON-CFC FOAM INSULATIONS**
\$100,000
DOE Contact: John Talbott, (202) 586-9455
ORNL Contact: Ken Wilkes, (615) 574-5931

This is the second year of a three-year extension of a joint project with the rigid foam industry for the development of alternative blowing agents to be used as drop-in replacements for the CFC blowing agents currently being used in the manufacture of foam insulation products. Prototype rigid foam boards blown with HCFC-141b and CFC-11 were sent to ORNL for testing and evaluation both in the laboratory and in outdoor test facilities. Tests are being conducted to determine mechanical and thermal properties and aging characteristics.

Keywords: CFC, Foam Insulation, Insulation Sheathing, Roofs

2. **EVACUATED POWDER PANEL INSULATION**
\$300,000
DOE Contact: John Talbott, (202) 586-9455
ORNL Contact: Ken Wilkes, (615) 574-5931

This project is for the development of an advanced technology super insulation concept. A layer of powder is sandwiched between two films and a soft vacuum is drawn on the powder filler. Current technology produces a R-40 per inch panel. More efficient powders and longer life encasing films are being developed.

Keywords: Insulation, Vacuum, Heat Transfer

3. **GAS-FILLED REFLECTIVE INSULATION PANEL**
\$50,000
DOE Contact: John Talbott, (202) 586-9455
LBL Contact: Dariush Aresteh, (415) 486-6844

This project is for the development of a super insulation concept that utilizes layers of reflective films enclosed in a flexible film panel which is filled with low conductivity gases. Mechanisms to provide greater structural rigidity are being investigated as are low permeability films and environmentally benign low conductivity gases.

Keywords: Insulation, Reflective Films, Low Conductivity Gases

4. **ACCELERATED LIFETIME TEST PROCEDURE DEVELOPMENT**
\$250,000
DOE Contact: John Talbott, (202) 586-9455
ORNL Contact: Ken Wilkes, (615) 574-5931

This joint project with the Appliance Research Consortium is for the development of an ASTM standard test procedure for measuring the thermal resistance and aging characteristics of insulating materials with R-values in excess of 20 per inch. The procedure requires the development of a specialized measurement configuration, the modelling of the test specimen within the test configuration, and the conduction of round robins with industry partners.

Keywords: Thermal Resistance, Test Procedures

5. **STANDARDIZED PROCEDURES FOR MEASURING
SOLAR REFLECTIVITY ON HORIZONTAL SURFACES**

\$100,000

DOE Contact: Mark Decot, (202) 586-6501

LBL Contact: Hashem Akbari, (510) 486-4287

The reflectivity of exterior building materials used for pavement and roofing has been demonstrated to affect heating and cooling costs in buildings where they are applied. The reflectivity of these surfaces also has an effect on ambient air temperature that has an additional indirect effect on heating and cooling costs in buildings. This research on procedures for measuring reflectivity is being conducted in cooperation with ASTM, the Lawrence Berkeley Laboratory and the Urban Heat Island Research Program.

Keywords: Solar, Reflectivity, Building Materials